



The Poultry Primer

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THE POULTRY PRIMER

FOREWORD

The time has come when the keynote of poultry feeding is "simplicity." There may be much to learn about feeds and feeding, but feeding as we know it now is comparatively simple. There are a few good rules, easy to follow, which we have included in this booklet.

Poultry keeping can be made profitable either as a full-time business or as a side-line. There are no particular secrets of success, but it is highly important that certain rules be followed, whether you have a large flock, or just a few chickens.

In the wild state, the hen had to provide her own housing facilities and forage for her food. Under these conditions all that could be expected of her was that she would lay about two dozen eggs a year, usually in the spring and summer months when conditions were most favorable for baby chicks.

But when people decided that they wanted fresh eggs the year around, they had to furnish summer conditions and summer foods twelve months of the year. In this booklet we shall show how this can best be done.

The most important single feature in raising poultry is that the birds, as well as their quarters, be clean and sanitary. Therefore, we shall consider first the problems of location and housing equipment.

LOCATING THE POULTRY HOUSE

Place the poultry house, facing the south in cold climates, in a spot where there is good drainage. If it is on a hill, place the house about half way up so that it will be protected from the wind. An orchard or a timbered lot is a good place for the birds to range.

VENTILATION

Ventilation is highly important. Remember that chickens have a normal body temperature higher than that of man. They breathe much faster, have no sweat glands and no fluid excretia. It is believed that chickens need about three times the number of cubic feet of air that is needed by man for the same number of pounds of live weight. The air must move continuously in a poultry house. A good method of ventilation is to provide large cloth-covered openings near the roof at both the front and rear of the house.

DRAFTS

Much can be done to make chickens more comfortable by sealing the house so that it will be free from drafts. Better production may be expected from hens raised under these conditions.

TYPE OF HOUSES

We suggest that anyone planning to build a poultry house, write to his state college for plans. These are usually best adapted to the particular needs of the locality.

SANITATION

Cleanliness is of greatest importance in poultry raising. The house should be designed so that it is easy to keep clean. Floor dropping boards and nests must be cleaned often and the house should be disinfected at regular intervals.

TEMPERATURE

If birds are kept at an even temperature they will do best. Guard against too sudden or too drastic change. A bird that is nearly freezing will not eat enough to keep up body temperature and egg production.

SIZE OF BUILDINGS

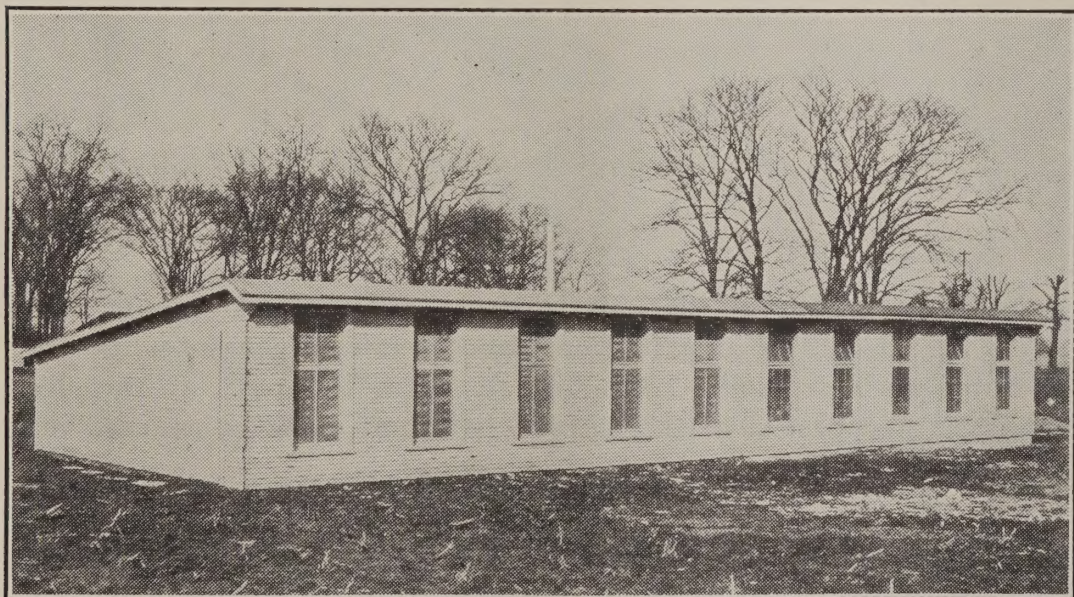
A flock of a few Leghorn hens will do best if allowed seven or eight square feet of floor space per bird; whereas a flock of one hundred and twenty-five or more will do well if allowed three and a quarter to three and a half square feet per bird. Rocks and heavy types of birds require proportionately more room. **Don't overcrowd.** For baby chicks a brooder house about ten feet square seems best for about two hundred and fifty chicks.

WINDOWS

While the ventilating or top windows should be covered with burlap or muslin, the lower windows should be of glass substitute and should be used only for light. Many authorities now agree that birds do better if the house is not too light. It appears that subdued light helps to control cannibalism, feather picking, etc. It may be advisable to paint windows with ruby red paint to darken the house.

WATERING TROUGHS

Any container that will not permit birds to get into or upset will do for a watering trough. In large houses it is well to build watering troughs stationary. In such cases the trough must have satisfactory drains so that it may be cleaned often.

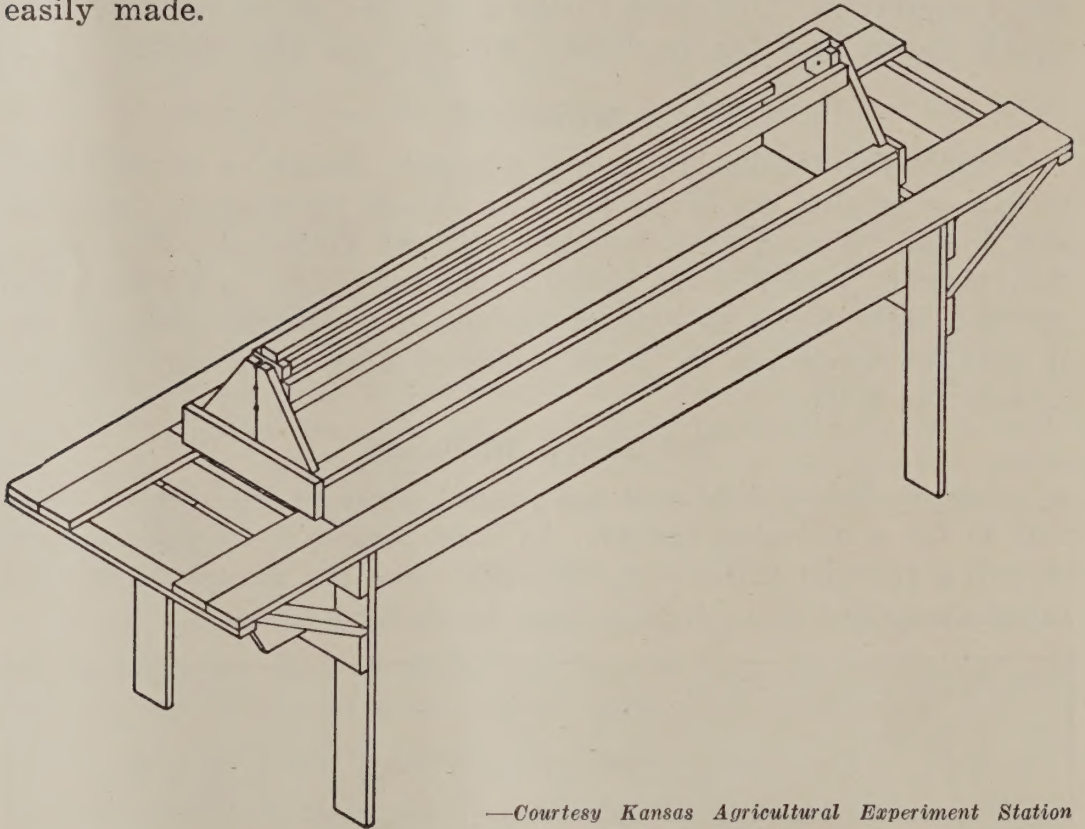


—Courtesy Ohio State University

Fig. 1—Good Type Poultry House

FEEDERS

In order that birds will eat Mash readily, the hopper (or feeder) should be placed in a location that is handy for birds. It must be large enough so that the birds will not be crowded. There should be sufficient hopper space for three-fourths of birds to eat at one time. See Figure #2 for good types of feeders that are easily made.



—Courtesy Kansas Agricultural Experiment Station

Fig. 2—A Feeder That Can Easily be Made at Home

PERCHES

Perches must be such that birds will be comfortable when sitting on them. A pole, two or three inches in diameter, is best. If dropping boards are not used, fence in the part of the floor under the perches, so that the birds will not come in contact with droppings.

DROPPING BOARDS

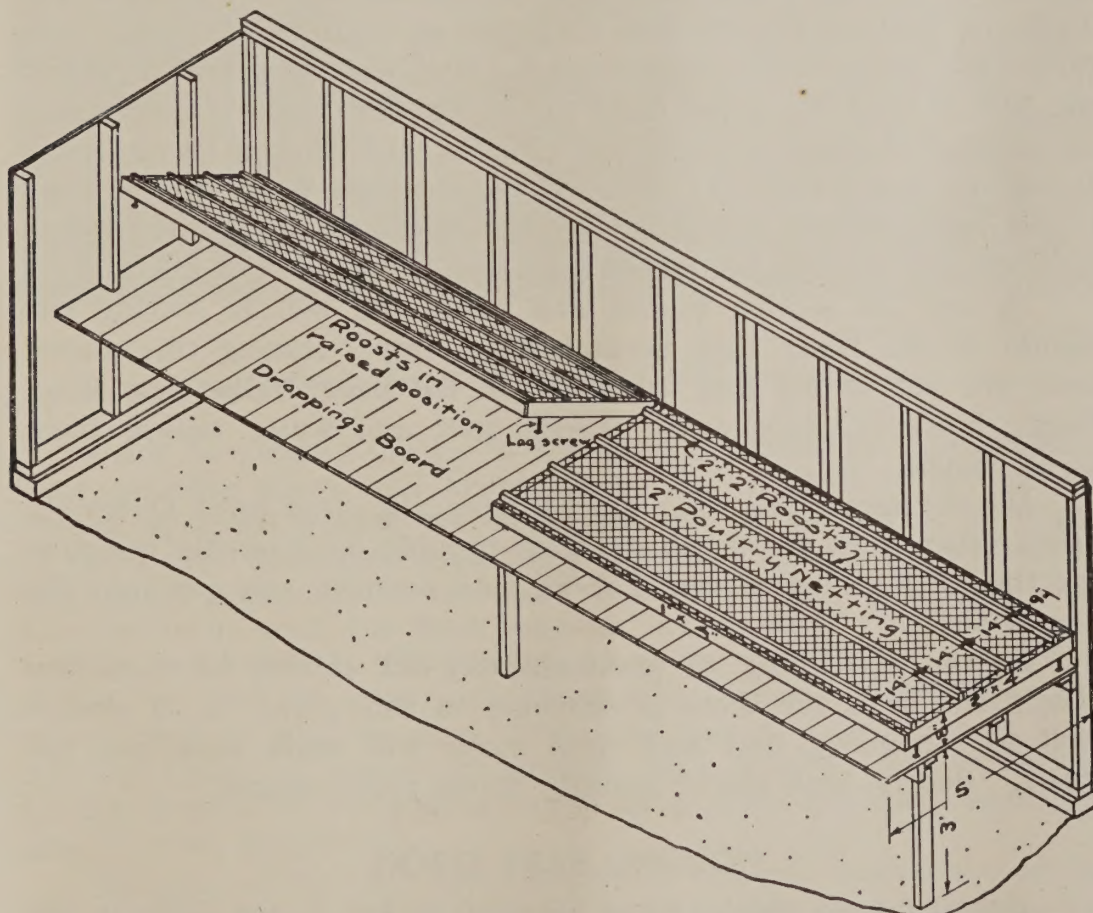
Under the perches there should be a board that can easily be removed and cleaned. Stretch two-inch mesh poultry wire below the perches so that birds cannot get on to dropping board. See Figure #3 for good types of perches and dropping boards.

NESTS

There should be a nest for every five to seven hens, with entrance away from light so nest will be dimly lighted. These nests should be large enough for comfort, but not large enough for more than one hen. They should be about twelve inches square for lighter breeds such as Leghorns, and fourteen inches square for heavier breeds. Nests should be removable for cleaning.

THE RANGE

Sandy soil is best for range purposes. If no sand lot is available, be sure that the location is such that it will drain well. Turn the ground each year and lime it well. Do this early in the spring before the birds are permitted to range. In the case of range for baby chicks, it is best not to use the same ground in consecutive years. Alternate the location. The birds should have shade as well as sunshine. Outdoor feeders should be sheltered from rain.



—Courtesy Kansas Agricultural Experiment Station

Fig. 3—Sanitary Arrangement for Roosts and Dropping Boards

BABY CHICKS

Having placed our house in order we now think of baby chicks. There is, of course, more than one method in which to obtain satisfactory chicks. If one has a flock and is satisfied with the production, it probably will be economical to hatch eggs from one's own flock. If great numbers are to be hatched, use artificial incubation. The eggs can be hatched at a commercial hatchery or in your own incubator. If you are going to operate your own incubator be sure to follow closely the instructions of the manufacturer.

If the number of chicks to be hatched is small, a broody hen can be used. In using this method be sure that the nest upon which the hen is to set is clean and the hen herself has been dusted with lice powder. Be sure that the eggs are fresh and have been candled; that they have been selected from good laying flocks of healthy stock; that they are of uniform size with uniform shell texture, and from well fed and well bred stock. After the hen has set upon the eggs for seven days they should again be candled, taking care not to chill them. The unfertile eggs should be discarded. At the end of fourteen days this process should be repeated. About three days before the eggs are hatched it is well to work a lice powder among feathers of the hen.

Before the setting period and while the hen is setting she should be fed **Daily Egg Scratch Feed** only. During this period hens are not to lay and therefore do not need **Daily Egg Mash Feed**; however, keep oyster shells, grit and water before them at all times.

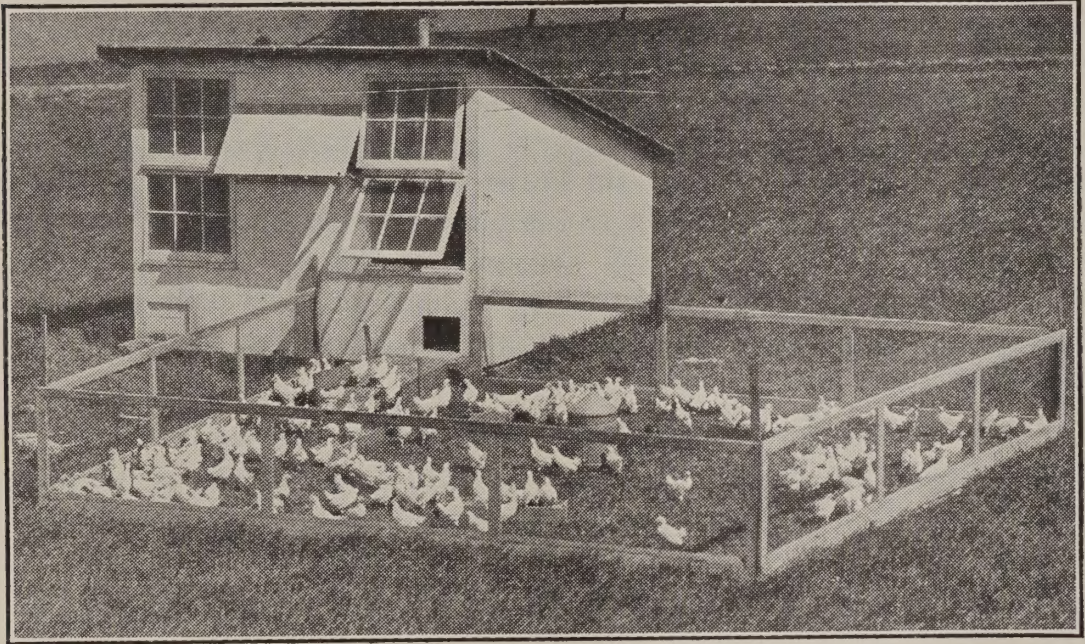
Do not move the baby chicks from the nest until thirty-six hours after they are hatched; then provide comfortable quarters for them. Be sure to see that no rats or mice can get into the house.

If you are going to purchase day-old chicks, be sure you obtain the best, for there is economy in this plan. It is always well to remember that well bred stock will more than pay for itself. Poorly bred chicks usually bring poor results.

HOUSING BABY CHICKS

Housing baby chicks when hatched by hen is not difficult, for if given proper quarters she will keep them comfortable. Keep confined so hen will not run chicks over old range.

Chicks that are hatched in an incubator are a different problem. Be sure to follow instructions given by brooder stove manufacturer. Be sure not to overcrowd chicks. Remember all livable chicks must have proper care. Instructions as to brooding must be followed carefully. A good type of brooder house is shown in Figure #4.



—Courtesy Purdue University

Fig. 4—Good Type of Portable Brooder House and Yard

Prior to placing chicks in the brooder house be sure to test your brooder stove and thermostat. As much trouble can be caused by over-heating the house as can be caused by chilling. If the house has been used for baby chicks before, disinfect it thoroughly and move it so that the chicks range on ground that has not been used for that purpose for at least two years. If moving the house is not possible then the ground for the range should be turned over and thoroughly limed. Many poultry raisers find it wise to raise chicks on wire and in place of permitting birds to range on ground they provide screen floors. Chicks should be allowed to range after they are two weeks of age, weather permitting.

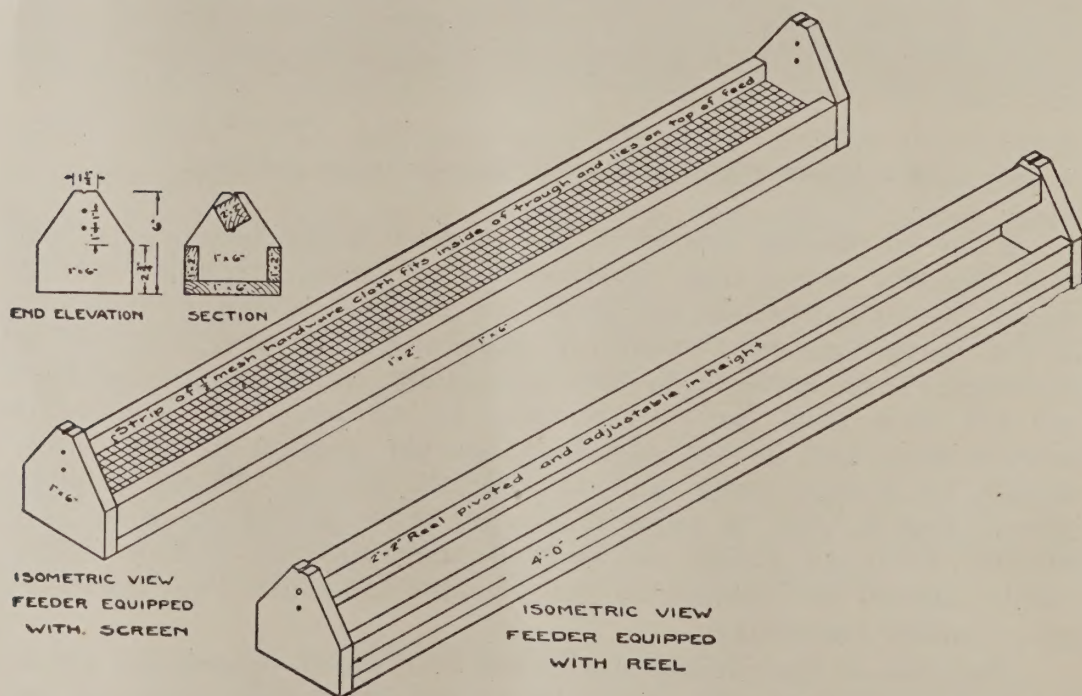
Because of the high temperature in brooder houses the air is apt to become very dry. In order to overcome this condition, we recommend nailing a burlap bag to the wall of the house and letting the bottom of it absorb water from a container that is so

built that the chicks cannot get into it or upset it. This device will provide proper humidity.

FEEDING THE BABY CHICKS

After hatching, immediately place and keep before the chicks at all times fresh water from which the chill has been removed. Cover the floor of the house with a layer of peat moss, cut clover, or cut straw. For the first couple of days cover the litter with paper. This is done so that the chicks will not eat litter. Do not feed them until they are forty-eight hours old. Chicks you purchase as day-old you should begin feeding at once. During the first three days feeding, mix enough water with the **Daily Growth Chick Starter** so that it will become crumbly. Feed the chicks several times a day but only as much feed as they will clean up in a ten or fifteen minute feeding period. Destroy the paper on which chicks have fed, after each feeding.

The fourth day place **Daily Growth Chick Starter** in dry form before the baby chicks, in hoppers, keeping the hoppers filled at all times. Be sure the hoppers are constructed so the chicks can-



—Courtesy Kansas Agricultural Experiment Station

Fig. 5—Plans for a Baby Chick Feeder

not walk or stand in them. They cannot over-eat on this feed. When the chicks are four or five days old provide fine grit and oyster shells in hoppers.

When the chicks are about ten days old add **Daily Growth Fine Chick Feed** to their ration. Do not feed over one-sixth of a pound in the morning and one-third of a pound in the evening for every twenty-five chicks. Gradually increase the amount of this feed as the birds become older. Continue this feeding plan until the birds are about six weeks old and then discontinue the feeding of **Daily Growth Chick Starter**. Now keep **Daily Growth Growing Mash** before the birds at all times.

When the birds are nine or ten weeks old they should be big enough so that it will not be necessary to feed them **Fine Chick Feed**. From then on feed them **Daily Egg Scratch Feed** in the litter once a day, in the evening, and only enough so that they will clean it up in a feeding period not to exceed fifteen minutes.

FEEDING COCKERELS

At about six weeks of age, one should be able to judge which of the birds are cockerels and which are pullets.

Cockerels should be placed in a separate house and prepared to be marketed at from eight to eleven weeks of age. During this time it is well to discontinue feeding them scratch grains and feed them only **Daily Growth Growing Mash**. For best results it might be well to add some buttermilk or dried skimmed milk to their ration.

FEEDING PULLETS

The continued feeding of **Daily Growth Growing Mash** in hoppers and **Daily Egg Scratch Feed** is desirable until the pullets are about five months old. Then change from **Daily Growth Growing Mash** to **Daily Egg Mash**. In addition to keeping water and coarse grit before the birds, be sure that they are furnished with plenty of crushed oyster shells. If pullets develop too fast it is well to cut down on Mash Feed. Do this by feeding a little more Scratch Feed. It is wise not to let Leghorns, etc., lay before they are five months of age. Heavier breeds such as Rocks, Reds, etc., should not be allowed to lay until they are six months old. Bringing the flock into the lay too early may cause a winter moult. Pullets should have all their adult feathers before getting into laying period. Feeding less Mash Feed and more Scratch Feed will retard laying.

FEEDING LAYING HENS

When the birds commence to lay, continue feeding **Daily Egg Mash** in hopper at all times plus one quart of **Daily Egg Scratch Feed** to each sixteen birds, in the litter, each evening. Keep water, coarse grit and oyster shells before them at all times.

AVOID OVER-FEEDING SCRATCH FEED

Many poultry raisers are of the opinion that any sort of feed will make eggs, and tend to over-feed Scratch Feed. Because of this over-feeding and also because of improper culling, many poultry raisers are likely to think (when they have killed a hen and found many yolks): "We should not have killed that bird, look at the eggs it would have laid." Very often this would not be true because the hen could not lay, having no whites to cover these yolks. The hen is so constituted that she can, if need be, absorb these yolks into her body, using them for heat and energy. Remember that it takes about eleven to fourteen days for the formation of the complete yolk, whereas only one day is needed to wrap the white and deposit shell membrane and shell around the yolk.

It can be seen from this that many yolks must be in the process of formation all the time. Finding a hen full of yolks of various sizes is no sign that you are feeding it properly. Remember, feeding too much Scratch Feed will make fat hens and an over-abundance of yolks and the hen will lack whites with which to make complete eggs.

The best way to be sure of obtaining maximum egg production is to follow feeding directions given in this booklet.

GREENS

It is well to feed greens to birds—lettuce leaves, fresh short grass clippings, sprouted oats, etc. Greens will darken color of yolks, so feed accordingly.

LIGHTS

If you wish to obtain maximum egg production it might be well to furnish your poultry house with electric lights. It should be so arranged that they are on from about 5:00 A. M. to daylight and from dark until about 8:00 P. M. If the lights go off suddenly, birds are often hurt or crippled in finding a roost. We recommend having a very small dim light burning all night—just enough light so birds can find their way around.

MOULTING

After having completed the laying period birds will moult, and we know of no better moulting ration to feed during this period than adding five pounds of Linseed Oil Meal to every one hundred pounds of **Daily Egg Mash Feed**. It probably will shorten the moulting period by a week's time.

CULLING

All too many poultrymen are feeding boarders—some think that if they raise and keep hens that come from good egg-laying strain, they have done the job well. That is not true, for, from any flock there will come drones and poor or non-layers.

The best time to cull is in July, August and September, after the peak of spring and early summer laying. During the peak months, almost any hen will lay well, so nothing much is to be gained by culling at that time. Many hens that will lay in spring may not lay again until the following spring. These birds must be eliminated if one expects a profit from any flock. Pullets should not be culled until they have laid three or four eggs.

In any type of culling, remember that more than one inspection should be given. Birds that it is believed best to discard should be separated from the balance of the flock and results should be rechecked.

Do not forget that while hens are moulting they cannot be expected to lay.

Trap nesting is, of course, the most accurate method of culling but it is costly and takes time and unless one has a fine market for eggs from such trap-nested flocks, the operation is not profitable.

The laying hen will have a box-like appearance and be free from layers of fat. She will have a waxy, shiny, stiff, smooth, full comb that has a high and red appearance. In breeds with large single combs, peak of comb is bent over. The opposite is true of the non-laying hen. The gradual change in the condition of the comb will indicate a change in egg production. There are times, however, that hens that have the laying-characteristic comb may not lay because of some internal trouble. Usually, in this case, the body characteristics will show that the bird is a non-layer.

The vent of the laying bird will be soft, pliable and dilated; in the non-layer, it will be hard, puckered and small.

In addition to this, each bird should be examined and her set-up of pelvic bones and her keel should be measured. The pelvic bones are the inverted "U" shaped bones, the point of which are at either side of the vent. The keel is generally known as the breastbone. In a laying bird, one should be able to lay the width of three fingers between the points of the pelvis and at least the width of four fingers between the pelvis and the rear end of the keel. See Figure #6.

In the yellow-skinned laying bird, the color of the beak and shanks will become paler as laying increases and as it decreases it becomes more colorful. This is due to the yellow pigment material being used to color yolks during the laying season.

CAPONIZING

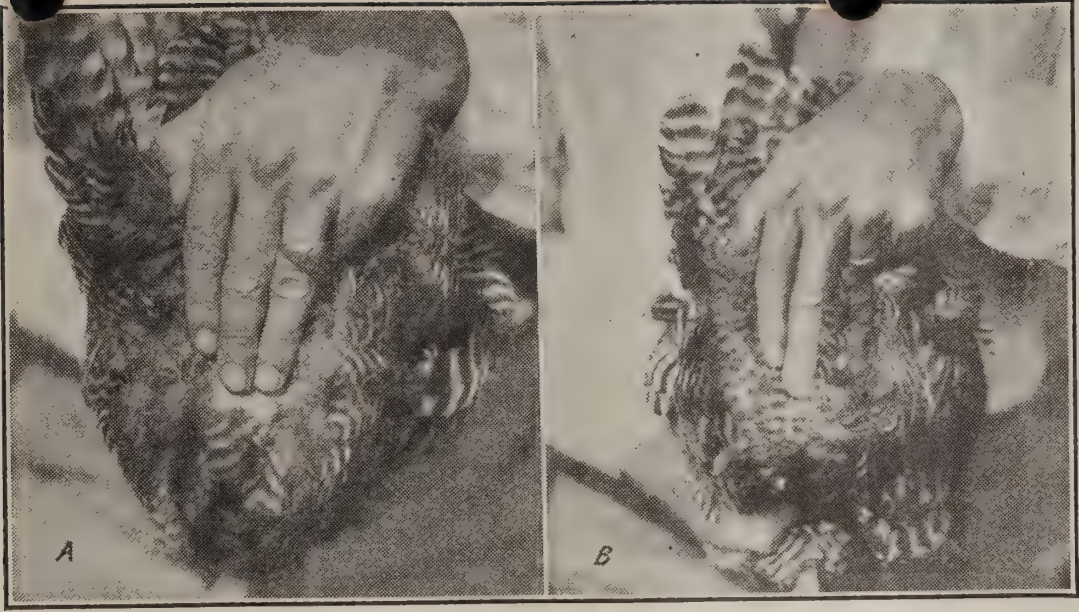
If you are raising a meaty type of birds it is our recommendation that in the season when the broiler price begins to fall that a few of the birds be caponized. These should be caponized when they weigh between one and one-half to two pounds. There usually is a good market for this type bird after the first of the year. The job of caponizing is a job for an expert. Your county agent may be happy to instruct you in this work.

BREEDING

Since the demand is for infertile eggs it is never well to house cockerels, or permit them on the same range, with the laying birds. When eggs are desired for hatching it is well to select the best layers and provide one good cockerel to every fifteen or sixteen hens. During this period it is well to have the hens producing not over fifty percent.

CHANGE OF FEED

While the change from one Scratch Feed to another can be made abruptly, it is always wise when changing from one Egg Mash Feed to another to make that change gradually. Mix the old Mash with the new Mash and taking about a ten-day period, increasing the new Mash content until the birds are feeding entirely upon the new Mash.



Pelvic Bones Indicate Laying Condition. The Spread Between the Pelvic Bones Is Greater When the Bird is Laying. A Shows a Three-Finger Spread of a Bird in Production, While B Shows a Two-Finger Spread With the Bird Out of Production.



—Courtesy Purdue University

Fig. 6—Position of Keel Bone Indicates Laying Condition. A Shows a Bird With Slightly More than Four Finger Capacity of the Abdomen, and is in Laying Condition. B Shows a Bird Out of Laying Condition With Three Finger Capacity of the Abdomen.

HOT WEATHER FEEDING

Because grains and Scratch Feed are principally heat-creating energy feeds, it is well to cut down on the amount fed during

the hot weather, at the same time increasing the amount of **Daily Egg Mash**, which has a cooling effect. Be sure birds have plenty of water.

WEIGHT OF BIRDS

The general tendency of small flock feeders is to over-feed Scratch Feed. This results in too fat hens and poor layers. Some feeders in their anxiety for egg production over-feed Egg Mash, forcing their birds into early moults and loss in egg production throughout the entire year. Birds become thin and susceptible to disease.

Our recommendation is that a few birds be leg banded and weighed at regular intervals of a week or two. This should give flock average.

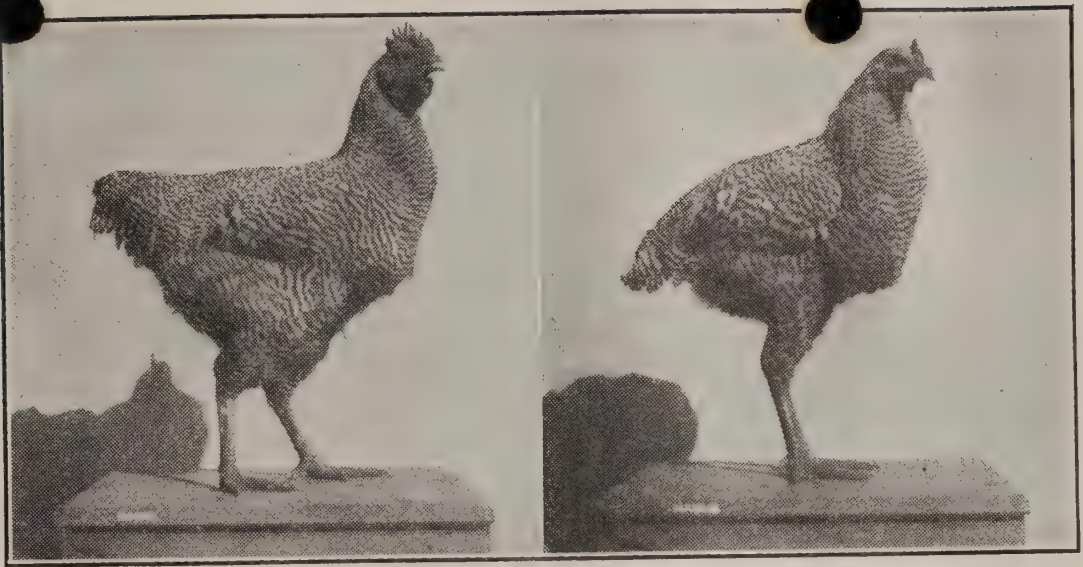
Pullets during their first laying period should gradually gain a little weight. Old hens should maintain an even weight.

IF YOU ARE NOT GETTING EGGS, CHECK UP ON THESE QUESTIONS:

- Has flock been culled?
- Are birds comfortable?
- Are they free from mites, lice, etc.?
- Have you followed the "Daily" feeding program?
- Have birds enough hoppers and fountains?
- Have birds had oyster shells at all times?
- Have birds had grit at all times?
- Are birds getting proper amount of greens?
- Have birds room enough?
- Have birds colds or disease?
- Is the poultry house clean?
- Is the poultry house well ventilated?
- Is the poultry house free from dampness?
- Are birds free from worms?
- Were pullets hatched at proper time and fed correctly?
- Are the birds heavy enough?
- Are the birds too fat?

THE EGG

The egg does not just happen,—we can control its production and do it simply by following the right rules.



—Courtesy Kansas Agricultural Experiment Station

Fig. 7—Cockerels Showing Good Vigor (Left) and Low Vigor (Right). Note the Difference in Shape of Head and Body.

Figure #8 shows the reproductive organs of the hen. This is the egg making machinery. If we will take care of it and feed it, eggs in abundance will result.

Eggs are formed first in the form of tiny yolks in the ovary. A follicle, or sac, encloses, nourishes and develops these yolks. It takes about fourteen days for the yolks to mature; when fully matured, the funnel of the oviduct rises and envelops the yolk sac, which splits along the stigmata, permitting yolk to pass on into the oviduct. The egg passes through the oviduct when the albumen (white) is laid on the yolk; then through the isthmus where more white and the shell membranes are laid; then into the uterus where the shell is deposited. The egg continues on its course and passes through the vagina, where some authorities believe that part of shell pigment and the gelatinous coat are applied. Some authorities state that it takes about twenty-four hours for the white and shell to be laid on the yolk.



(Right) Fig. 8—Reproductive Organs of a Hen

DISINFECTING

Nothing is more important than regular disinfecting. A good coat of white-wash all over the roosts and nests, or 10% solution of formaldehyde, is splendid. This, however, should not be applied until after the entire house has been scraped and cleaned.

LITTER AND NESTING MATERIAL

There is no better place for mites, lice and germs to breed than in filthy litter and nesting material. It should be kept clean and changed as regularly as needed. A good way to judge whether change is needed is to ask yourself if you would be comfortable in such litter. If the answer is no, then change the litter.

LAYING CAGES

Keep **Daily Egg Mash** before birds in laying cages at all times. Sprinkle **Daily Egg Scratch Feed** over Mash twice a day, using the same proportion as in feeding when not confined to cages. Keep grit, oyster shells and water before the birds at all times.

CARE OF FEED

No matter how well feed is prepared it still must be properly cared for. Be sure to store your feed in a cool, dry place, taking as good care of it as you would foods for your own consumption.

To discuss each feeding material and its relative value is impossible in this booklet. It is sufficient to say that materials used in the "**Daily**" line of feeds are the best obtainable for the purpose. These feeds are manufactured so that they will give results and so that expensive and constant reselling is not necessary. Once used, the "**Daily**" line of feeds will sell themselves to feeders. This makes it possible to offer the best possible feeds at lowest possible prices.

Not only are these feeds formulated so that they will give maximum results but they are cleaned and recleaned so that no waste or useless materials are contained in the bag.

Experienced men in the field of feeding and the manufacturers are ever guarding the uniformity and quality of "**Daily**" feeds.

Uniformity of feed for chickens is probably the most necessary point to be considered. Without uniformity the best results cannot be obtained. "**Daily**" feeds are uniform.

Every pound of "**Daily**" feeds is useful. There is nothing wasteful in any bag.

STARTS CHICKS RIGHT

DAILY GROWTH CHICK STARTER

Guaranteed Analysis:

Protein 16%	Fat 4%
Fibre 5%	N F E 53%
Carbohydrates 58%	

Ingredients: Dried Buttermilk, Dried Skimmed Milk, Meat and Bone Scrap, Wheat Flour, Wheat Standard Middlings, Ground Corn, Corn Feed Meal, Ground Oats, Ground Oat Groats, Old Process Linseed Oil Meal, Alfalfa Meal, Cod Liver Oil, Calcium Carbonate from Limestone 1%, Salt 1/2%, Steamed Bone Meal 1/2%.

RAISES ALL LIVABLE CHICKS

BIGGEST GAINS IN WEIGHT

DAILY GROWTH GROWING MASH

Guaranteed Analysis:

Protein 17.5%	Fat 4%
Fibre 7%	N F E 51%
Carbohydrates 58%	

Ingredients: Meat and Bone Scrap, Dried Buttermilk, Dried Skimmed Milk, Wheat Bran, Alfalfa Meal, Wheat Standard Middlings, Corn Feed Meal, Ground Oats, Ground Barley, Old Process Linseed Oil Meal, Corn Gluten Feed, Cod Liver Oil, Calcium Carbonate from Limestone 1%, Steamed Bone Meal 1/2%, Salt 1/2 of 1%.

BUILDS PULLETS INTO REAL LAYERS



100 LBS. NET



REG. U.S. PAT. OFF

NO GRIT

GUARANTEED ANALYSIS
PROTEIN 10% FIBRE 5%
FAT 2.5% CARBOHYDRATES 60%
NITROGEN FREE EXTRACT 55%

INGREDIENTS
WHEAT, CRACKED CORN, KAFFIR CORN,
BARLEY, OATS, MILO, SUNFLOWER SEED
AND BUCKWHEAT

PACKED ESPECIALLY FOR
THE GREAT ATLANTIC & PACIFIC TEA COMPANY
NEW YORK, N. Y.

The Guaranteed Analysis and the Ingredients can be easily read on these two bags. In addition to the Daily Egg Mash Feed pictured here, there is a SPECIAL Daily Egg Mash Feed, the ingredients of which appear on the opposite page.

GIVE YOUR POULTRY THE

100 LBS. NET

DAILY EGG



MASH FEED

GUARANTEED ANALYSIS	
PROTEIN	MIN. 20 %
FAT	MIN. 4.5 %
FIBRE	MAX. 7 %
CARBOHYDRATES	MIN. 56 %
NITROGEN FREE EXTRACT	MIN. 49 %

MADE FROM - GROUND OATS, GROUND BARLEY, SOY BEAN OIL MEAL, OLD PROCESS LINSEED OIL MEAL, CORN GLUTEN MEAL, WHEAT STANDARD MIDDINGS, WHEAT BRAN, ALFALFA MEAL, CORN FEED MEAL, DRIED BUTTERMILK, DRIED SKIM MILK, MEAT AND BONE SCRAP, FISH MEAL, FLOUR MIDDINGS, COD LIVER OIL, COD LIVER MEAL, CALCIUM CARBONATE FROM LIMESTONE 2½%, STEAMED BONE MEAL 1½%, SALT ¼ OF 1%, RED IRON OXIDE ⅓% AND .0015% POTASSIUM IODIDE.

PACKED ESPECIALLY FOR
THE GREAT ATLANTIC & PACIFIC TEA COMPANY
NEW YORK, N. Y.

SPECIAL DAILY EGG MASH FEED

Guaranteed Analysis:

Protein 20% Fat 4.5%
Fibre 7%
Nitrogen Free Extract 49%
Carbohydrates 56%

Ingredients: Ground Oats, Ground Barley, Old Process Linseed Oil Meal, Wheat Standard Middlings, Wheat Bran, Alfalfa Meal, Corn Feed Meal, Dried Skimmed Milk, Meat and Bone Scrap, Corn Gluten Meal, Flour Middlings, Cod Liver Oil, Calcium Carbonate from Limestone 1%, Salt ½%.

BEST >>> "DAILY FEEDS"

STARTS CHICKS RIGHT

DAILY GROWTH FINE CHICK FEED

Guaranteed Analysis:

Protein 10%	Fat 3%
Fibre 5%	N F E 54%
Carbohydrates 59%	

Ingredients: Cracked Wheat,
Cracked Kafir Corn and Milo,
Cracked Corn, Steel Cut Oat
Groats, Millet.

RAISES ALL LIVABLE CHICKS



TALCO NO CORN FINE CHICK FEED

Guaranteed Analysis:

Protein 10%	Fat 3%
Fibre 4%	N F E 54%
Carbohydrates 58%	

Ingredients: Cracked Wheat,
Cracked Kafir and Milo, Steel
Cut Oat Groats, Millet.

VITAMINS

It is known that vitamins are important in the food of humans and animals alike. Feeds should be so formulated that vitamins are present in proper balance. **Daily Mash Feeds** have the proper vitamin balance.

So important are vitamins that we believe they should be considered in this booklet.

Vitamins are substances in feeding materials that are unknown insofar as their physical characteristics are concerned. The only thing that is known about them is their effect. We do know each of these vitamins has its own peculiar effect and that certain results take place when the vitamins are absent.

It may best be said that food containing proper amounts of vitamins prevents deficiency diseases.

The following will give you an idea of what each vitamin does:

VITAMIN "A"

Lack of Vitamin "A" causes a peculiar diseased condition of the eyelid known as Xerophthalmia. In the case of poultry it may bring on respiratory diseases similar to roup and colds. If it is not present, normal growth will not take place and all the feed in the world will not do any good. A liberal quantity of this vitamin is contained in **Daily Mash Feeds**.

VITAMIN "B"

Vitamin "B" is known as the Anti-Neuritic vitamin and has to do with the nervous development, that is, the nervous system of the animal. Lack of this vitamin prevents proper growth, which may be followed by partial or complete paralysis. **Daily Mash Feeds** contain required amounts of this vitamin.

VITAMIN "C"

So far as is known, Vitamin "C" is of little importance in the poultry ration.

VITAMIN "D"

Known as the Anti-Rachitic or sunlight vitamin. This vitamin is of particular importance to poultry. Without it there cannot be proper assimilation of phosphorus and calcium and in baby chicks it results in leg weakness, improper bone structure and stunted birds. Since most baby chicks are now raised in confinement, they do not come in contact with the direct rays of the sun so they must be fed Vitamin "D." This is done by feeding

Cod Liver Oil. Not all Cod Liver Oil carries as satisfactory and plentiful a supply of Vitamin "D" as does the oil used in Daily Mash Feeds. The oil we use is tested before it is included in the feed.

Vitamin "D" is also necessary to insure good egg shell texture.



—Laboratory of Nopco or National Health Products Corporation

Fig. 9—Chemist Testing Cod Liver Oil Used in Daily Feeds

VITAMIN "E"

Vitamin "E" is known as the reproduction vitamin. In case of certain experimental animals the absence of Vitamin "E" will cause sterility in the female but fertility may be brought back when Vitamin "E" is added to the feed in sufficient amounts; in the case of males, once they become sterile because of lack of Vitamin "E" they will remain so, regardless of the amount present thereafter. Ample amounts of this vitamin are found in Daily Mash Feeds.

VITAMIN "G"

Known as the Anti-Pellagric vitamin. Its presence prevents a disease known as Pellagra. In poultry, skin eruptions and poor

plumage may result from the lack of Vitamin "G." This vitamin is supplied in abundance in Daily Mash Feeds.

COSTS

All too many feeders do not figure costs. Complete records of costs and production should be kept. Do not keep your flock, let it keep you. A useful chart for quick computing of costs is reprinted from circular #275 by courtesy of the University of Illinois.

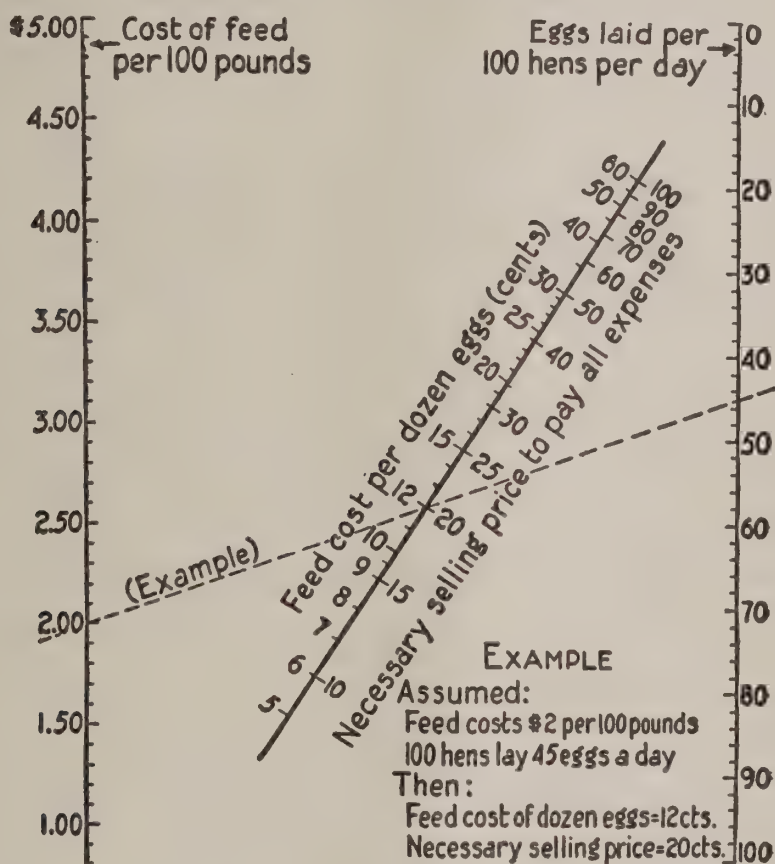


Fig. 10—Quick Method for Calculating Cost of Eggs

To find the feed cost of a dozen eggs when the cost of feed per 100 pounds and the number of eggs laid per 100 hens per day are known, lay a straightedge across the chart so that it connects the proper points on the two outside scales (feed cost and egg production). The feed cost per dozen eggs and the necessary selling price to cover all expenses are then read directly from the inclined scale where it is crossed by the straightedge.

In constructing the chart it has been assumed that 100 hens will use 22.5 pounds of total feed per day, or 82 pounds per hen per year. The scale for necessary selling price is based on the assumption that feed represents 60 percent of the total cost of production. This ratio is about right for farm flocks under average conditions, tho when feed prices are unusually high the indicated selling price will be somewhat too high, and when feed prices are very low the indicated price will be somewhat too low, unless all other costs have moved in the same direction as feed prices.

Reprint from Circular No. 275 by special permission of the University of Illinois.

FEEDING DUCKS

In the feeding of small flocks of ducks, the feeder may use the same line of **Daily Feeds** that is fed poultry. Following are the suggested directions for feeding:

Until the ducks are two weeks old, they should be fed **Daily Growth Chick Starter** to which has been added 2% or 3% torpedo or coarse sand—mix with just enough water to make it crumbly. Feed this mixture about five times a day but only as much as the ducklings will clean up in a fifteen to twenty minute feeding period.

After two weeks, feed should be changed to **Daily Growth Growing Mash**, making this same addition of sand and water. Feed this to the ducks about three times a day—all they will clean up in a half-hour feeding period. This procedure may be continued until such a time as the ducks are ready to market.

Always keep before the ducks plenty of fresh water and grit. The addition of greens to a duck's ration is necessary.

CARE OF EGGS

Eggs properly cared for bring the highest price. Care must be taken before and after egg is laid if this high market is to be obtained. The following are a few good rules to follow:

- 1—Practice cleanliness—dirty eggs bring low prices.
- 2—Keep only vigorous stock; such hens lay best quality eggs.
- 3—Keep males away from hens; infertile eggs bring best prices because they keep better.
- 4—Provide enough nest room.
- 5—Remove, from flock, hens laying eggs containing blood spots. These are caused from ruptured condition. Do not permit birds to become overfat or be frightened. See that roosts and nests are not too high.
- 6—Gather eggs twice a day. Place eggs in cellar or cool room in which air is moist. Market quickly.
- 7—Use care in packing.
- 8—Grade eggs to uniform size. Use small and extra large eggs at home. Uniform size eggs bring highest prices.
- 9—Do not wash eggs; a dirty egg going into storage will bring more money than a washed egg.
- 10—Produce eggs with uniform yolk color. Overfeeding of greens and corn will darken yolks. Pale colored yolks bring best prices at present.

TROUBLES

Most of the troubles of the poultry raiser come from causes over which he has some control. Properly fed flocks will resist disease germs better than poorly fed flocks. Unless the birds are properly cared for, they cannot be expected to resist the many disease germs. Therefore, we have laid a great deal of stress upon sanitation.

Should disease appear in the flock, we give a few simple controls and suggestion of methods that have been found effective in many instances. These are not guaranteed cures. They are only suggested as temporary control to be followed until you have written to your state college and have received a reply. Most diseases of poultry are contagious. Therefore, should disease appear, remove the sick birds at once from the flock. Write your state college, giving full details of the nature of your trouble and ask them whether or not you should send them chickens for post-examination. If chickens die and you do not know the reason, mail them a sick chick immediately and ask for diagnosis and remedy. Your state college has specialists who will gladly give you the information needed. Avoid the use of "cure-all remedies." Use your state college as you would your own doctor.

APOPLEXY

Symptoms: Bird drops dead.

Cause: Ruptured blood vessel in brain. May be due to excitement. Over-fat birds. Insufficient exercise. Post Mortem: Blood clots on brain.

Treatment: None. Try to prevent by proper feeding. Do not feed too much Scratch Feed. Cut down to half rations for three to five days should disease appear in flock.

BLACKHEAD

Symptoms: Usually develops in young turkeys. Marked diarrhea. Lack of interest in food. Head, dark in color; dejected; weak legs; plumage ruffled. Post Mortem: Spotted liver; yellow, ulcer-like spots.

Cause: Parasite spread through droppings. May be present in chickens but apparently not particularly harmful. Parasites remain in soil for a long period. May be spread by worms. May be spread by older birds.

Treatment: Rotation system of turkey growing. Plow, seed and cultivate previously used runs. Thoroughly cleaning and disinfecting. Remove any sick poults and put the rest into clean quarters on fresh ground. Use milk flush as in Coccidiosis. Do not run turkeys on same range with chickens.

BLOOD SPOTS IN EGGS

Symptoms: Usually found in eggs during the spring of the year when hens are laying heavily.

Cause: Ruptured blood vessel which connects blood stream with yolk sac. Various causes for rupture—hen becoming unduly excited, nervous, etc. Roosts or nests may be too high.

Treatment: Watch hens, candling all eggs. Dispose of hens laying such eggs.

BRONCHITIS

Symptoms: Fowl rattles when breathing, eyes bright, comb bright. Labored and rapid breathing.

Cause: Colds, exposure to cold, drafts and dampness, or irritation and inflammation from breathing irritating vapors and dust.

Treatment: Warm, dry, clean, well-ventilated house. Disinfect premises. Remove sick birds. Dose bird with ten drops spirits turpentine in one teaspoonful castor oil. Use Potassium Permanganate (See Colds).

BUMBLEFOOT

Symptoms: Birds have difficulty in walking. Abscesses or corns appear on feet.

Causes: Bruising or injury. May be caused by wrong kind of roosts—too narrow or too high; walking on sharp materials such as cinders.

Treatment: If abscess is ripe it may be lanced; dig and squeeze out pus; disinfect with 2% solution of compound cresol, and bandage foot.

CANNIBALISM

Symptoms: Chicks picking feathers, toes, etc., of other chicks.

Cause: Brooder house too dry and not well ventilated. Too much light. Lack of proper grit.

Treatment: Remove bloody chicks from flock. Apply coal tar preparation to injured parts. Applying to other birds, vaseline or lard to which alum has been added may break them of

habit. Ventilate house; supply moisture by tacking burlap bag to side of brooder house and allowing it to absorb water from containers which cannot be upset. Cut down amount of light in house. Paint windows with ruby red paint.



—Courtesy United States Department
of Agriculture

Fig. 11—A Severe Case of Pox Infection

CHICKEN POX

Symptoms: Growths on comb, wattles, face and sometimes in mouth, forming scabs which may bleed when removed.

Cause: A germ which may be transmitted by other birds, pigeons, flies, mosquitoes, etc.

Treatment: Isolate sick birds. Disinfect drinking water. Give a laxative. Wash eyes with 10% solution of argyrol. Vaccinate with good vaccine for control.

CHOLERA-LIKE DISEASE

Symptoms: Comb dark bluish, bird sleepy, feathers rough, flesh clammy and bloodless, dejected condition, constant diarrhea (yellow, brown or green). Sudden death, often in large numbers.

Cause: Germs enter body through contaminated feed and water. Spread is rapid. More common where fowls are crowded. Sometimes spread by pigeons, but not likely ever brought in by baby chicks.

Treatment: Treatment useless; medicines positively no cure. Rigid sanitary measures only method of control. Kill and burn sick birds. Thoroughly clean and disinfect. Isolate well fowls in small groups. Place antiseptic in drinking water to prevent spread of disease.

COCCIDIOSIS

Symptoms: Fatal to young chicks. Adult birds sometimes act paralytic. Birds are sleepy, dull and weak and do not eat; have diarrhea, possibly bloody droppings. Liver spotted and cheese-like yellow content in blind gut.

Cause: The germ causing this disease may live in litter or poultry yards for months. Can be spread from chicks through drinking water and feed becoming contaminated by droppings of chicks affected. Usually fatal to chicks.

Treatment: Isolate sick birds. Disinfect premises. Feed two parts **Daily Growth Chick Starter** and one part dry skimmed milk; for eight to ten days feed no coarse grain ration. Prevent over-crowding. Get chicks to roosting as soon as possible.

COLDS AND CATARRH

Symptoms: Gummy deposits around nostrils, froth in eyes, irritation, shaking of head. Forerunner of roup and very similar but there is no foul odor. Sometimes birds have diarrhea.

Cause: Unknown. However, is encouraged by drafts, dampness, overcrowded conditions. Sudden heating and chilling. Exposure in transportation. Very common in young stock in the fall.

Treatment: Isolate sick birds. Remove the cause. Disinfect premises. Give Laxative. Put Potassium Permanganate in drinking water, coloring only to rich wine red. Application of mild antiseptic in nasal passages.

CONSTIPATION

Symptoms: Birds seem lame and will stand with backs arched. Have difficulty in walking. Also lose appetite and appear dull and listless.

Cause: Associated with indigestion, gastritis and peritonitis. Largely due to lack of green feed and exercise.

Treatment: Epsom Salts—1½ ounces to 1 pound of Egg Mash fed wet, or 1 teaspoonful castor oil per bird. Feed green feed.

CROP BOUND

Symptoms: Birds have foul breath and appear uncomfortable. Crop is large, distended and full of feed. Birds constantly crowding crop.

Cause: Lodging of such material as grass and litter in crop or passage leading from the crop and partial paralysis of muscles from over-eating.

Treatment: (1) Try pouring sweet oil down the throat and working the contents out with hand. (2) Open crop, remove contents, wash and sew up opening. This is a job for an expert. Be sure grit is before birds at all times. Feed charcoal during such disturbance of digestion. Teaspoonful of soda may help.



—Courtesy Kansas Agricultural Experiment Station

Fig. 12—A Chick Six Weeks of Age Suffering from Coccidiosis

DIARRHEA (Common)

Symptoms: Weak condition of chicks; drooping wings. Often pasty deposits below vent. Usually appears between when seven to eighteen days old.

Cause: Overheating and chilling of eggs or chicks. Weak stock, Low vitality. Chicks eating contaminated food, litter, grit, etc., before having been fed **Daily Growth Chick Starter**. Lack of exercise. Overcrowding. Unsanitary conditions.

Treatment: Remove cause. Thoroughly disinfect premises. Kill off diseased chicks. Practice feeding as directed. Give dose Epsom Salts, about one pound in drinking water for every one hundred grown birds. Do not mistake ordinary diarrhea for bacillary or white. Overfeeding of chicks may cause diarrhea.

WHITE DIARRHEA (Bacillary)

Symptoms: Weak condition of chicks. Drooping wings, ball-shaped bodies. Pasty deposits below vent. Later severe diarrhea, droppings gummy. Highest death rate occurs about three days of age.

Cause: The germs of this particular form of diarrhea may be transmitted from parent to offspring through the egg.

Treatment: There is no known cure. Practice scrupulous cleanliness and disinfection of chick equipment. Prevention — use non-infected stock and eggs and be careful with purchases of chicks. Feed buttermilk or sour milk, in addition to regular feeding as outlined in this booklet. Kill off weak or affected birds.

DIPHThERIA

Symptoms: False membrane in nostrils, throat, mouth. Foul odor like roup. Membrane bleeds if growth removed. Sometimes difficulty in breathing.

Cause: Sores of infected birds contain poison which is easily transmitted through feed, water, etc.



—Courtesy United States Department of Agriculture

Fig. 13—Fowl Diphtheria. Neck Slit Open to Show Diphtheritic Patches in Mouth and Esophagus. (After Ratz.)

Treatment: Isolate infected birds. Soften scabs with vaseline. Scrape them off and cauterize with stick of nitrate of silver. Give daily antiseptic washes. Vaccination considered beneficial. Kill badly affected birds.

EDEMA OF WATTLES

Symptoms: Liquid or cheesy matter contained in wattles.

Cause: May be caused by bacteria.

Treatment: Tightly clamp wattle above swelling, cut off affected part, cauterize with septic pencil to prevent bleeding.

EGG BOUND

Symptoms: Hens will be listless, wings may droop, and they will repeatedly try to lay, which may cause "prolapsus of oviduct."

Cause: Overly fat hens caused by feeding too much Scratch grains, table scraps, etc.

Treatment: Try injecting sweet oil in egg passage. Give hen about two teaspoonsful of castor oil. Feed strictly in accordance with instructions given in this booklet.

FAVUS

Symptoms: Dry white crust covering head and parts of body.

Cause: Fungus known as *Achoyion Schonleinii*.

Treatment: Isolate birds. If body becomes infected, kill bird. Disinfect premises. Apply ointment made of 1 part calomel to 8 parts vaseline. Applying tincture of iodine is helpful.

FROZEN COMB

Symptoms: Comb or part of it discolored and inflamed.

Cause: Poultry house too cold and poorly ventilated or damp.

Treatment: Thaw out by rubbing comb with snow. If snow not available, use vaseline.

GAPES

Symptoms: Birds affected, cough and discharge mucus. They will lose weight and become weak.

Cause: A worm or parasite that sucks blood from the windpipe.

Treatment: Very difficult to cure. Try removing parasites from windpipe with the tip of a feather which has been dipped in turpentine. Thoroughly disinfect and turn ground where birds range.

INDIGESTION

Symptoms: Droopiness, listless. Droppings may be watery and red, somewhat like diarrhea.

Cause: Improper feeding, lack of grit and green foods. May also be caused by eating spoiled foods.

Treatment: Dose individual birds with one-half ounce castor oil, or whole flock with one pound Epsom Salts in drinking water of each one hundred birds.

LEG WEAKNESS

Symptoms: Chicks wobble on legs, sit down to eat, drag on hocks.

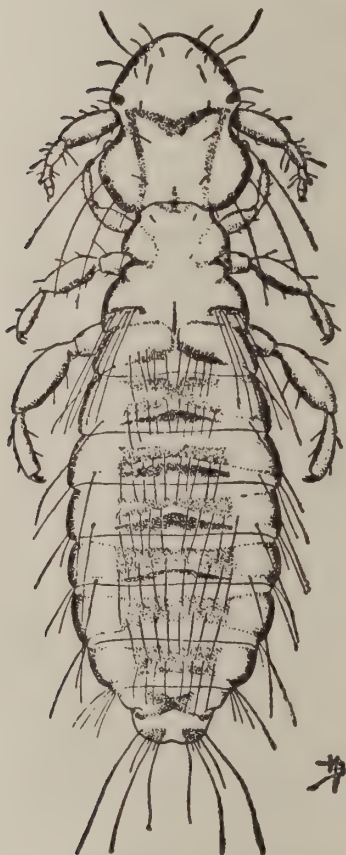
Cause: Largely a nutritional deficiency. Lack of Vitamin "D," lack of sunshine or bone building materials.

Treatment: Expose to direct sunlight. Feeding as outlined in this booklet will prevent, and correct if chicks are not too badly affected. If birds have been given feeds containing no cod liver oil, add 2% cod liver oil to mash feed.

LICE

Symptoms: Birds restless, pick and scratch themselves. May lose weight. Sometimes accompanied by bowel trouble.

Cause: Unsanitary surroundings, poor management and carelessness.



—Courtesy United States
Department of Agriculture

Fig. 14—The Head Louse,
Male, Top View. Greatly
Enlarged.

Treatment: Thoroughly clean and disinfect premises. Dust birds with a mixture of one part Sodium Fluoride to four parts fine ashes. For dipping, one ounce Sodium Fluoride to one gallon water. Dip on warm sunny day. Use "Black Leaf 40" according to instructions recommended.

LIMBER NECK

Symptoms: Lose control of neck. Bird weak, head may drag or be held back over body. Staggering walk.

Cause: Poison. Eating decayed animal matter, sour and molded feed or poisons from sprays, etc.

Treatment: Remove the cause. Give Epsom Salts. Do not feed scraps from table. Destroy affected birds. Always burn dead birds.

MITES

Symptoms: Emaciated and dejected appearances. Rather inactive. During the day mites may be found in cracks and crevices throughout the house and in litter.

Cause: Same as lice.

Treatment: Thorough cleaning of house and nests. Burn all litter, spray all parts of house, walls, roosts, nests, floor, etc., with forced spray. Use one gallon kerosene, one

gallon crude oil or crankcase oil, and four ounces crude carbolic acid or one pint cresol, creolin or sheep dip. Repeat in ten days. This is an effective disinfectant. For scaly leg mite, dip shank in kerosene.

PLUMING MITE

Symptoms: Birds pulling out own feathers because of discomfort caused by mites.

Cause: Mite similar to scaly leg.

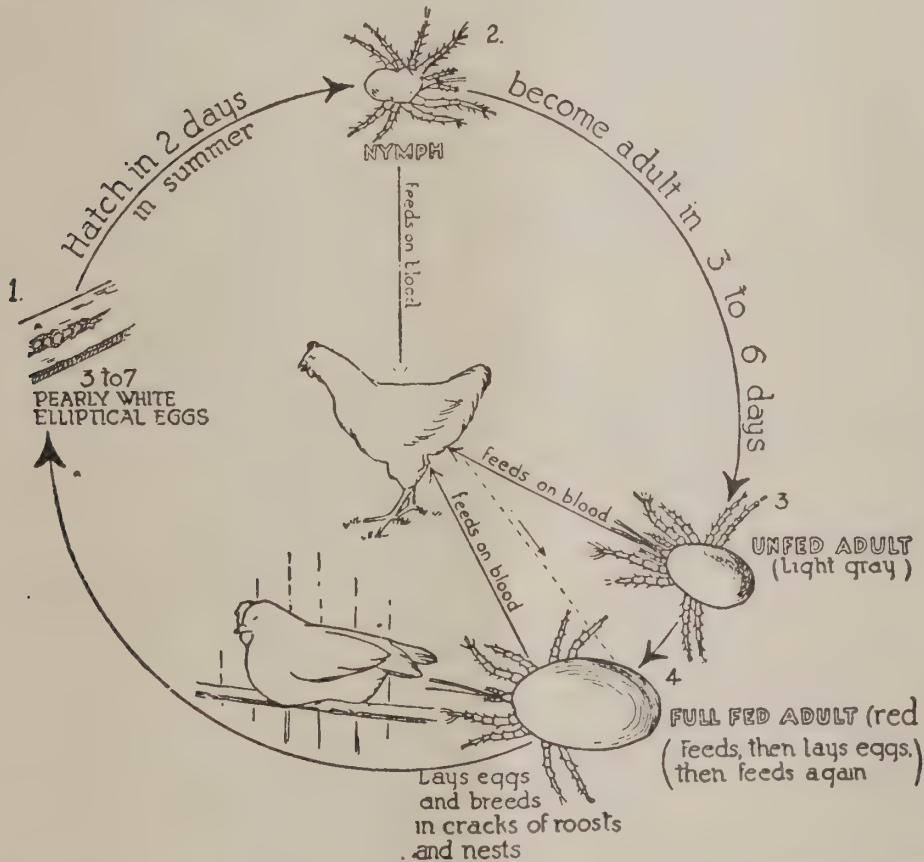
Treatment: Isolate birds. Apply ointment made of one part caraway oil to five parts melted vaseline.

PNEUMONIA (Aspergillosis)

Symptoms: Rapid and labored breathing. Bloody mucus may show at corner of mouth. Comb dark or bluish, birds sleepy, congestion of lungs.

Cause: Cause not definitely known. Associated with lung congestion such as is caused by *Aspergillus* mold found in moldy straw and feed. More common in brooder chicks.

Treatment: No satisfactory cure known. Clean brooders, feed and litter. (Treat moldy litter with formaldehyde and let dry before using.) See that houses and brooders are warm, dry, light and well ventilated.



—Courtesy United States Department of Agriculture

Fig. 15—Diagram Showing the Life Habits of the Common Chicken Mite

PROLAPSE OF OVIDUCT

Symptoms: Bloody or inflamed protruding vent.

Cause: Caused by hens straining and laying too large or double-yolked eggs. Hen overly fat and fed too much scratch grains and table scraps.

Treatment: Separate affected birds. Apply carbolated vaseline to protruding part and gently push or work back. Feed **Daily Egg Mash** lightly for few days until bird is cured, then resume feeding as outlined in this booklet.

RHEUMATISM

Symptoms: Stiff joints, muscles contracted, toes sometimes drawn under feet. Walks stiff and lame. Inflammation of muscles and joints.

Cause: Exposure—improper housing conditions. Gout and tuberculosis cause lameness also.

Treatment: Dry, warm, well-ventilated houses and well-drained runs. Keep healthy stock of high vitality.

ROUP (Nutritional)

Symptoms: May have eyes closed, nostrils running, face swollen, comb pale, wheezing breath of offensive odor. In last stages of disease may have diarrhea.

Cause: Results of colds caused by dampness, improper housing and ventilation. Spreads rapidly. Stunts growth and lowers vitality. Makes susceptible to other diseases. Lack of Vitamin "A" because of insufficient feeding of greens.

Treatment: Correct cause, feed greens, dose birds with fresh cod liver oil, adding 2% to feed and up to 15 or 25 drops per bird in severe cases.

ROUP (Ordinary)

Symptoms: Similar to head cold—wheezing, oftentimes eyes are full of matter. Diarrhea not present.

Cause: Same as colds.

Treatment: After birds have gone to roost, spray their heads thoroughly for three consecutive nights, with camphorated oil. Do not eat birds when giving this treatment for flesh will taste of camphor. Eggs will not be affected.



—Courtesy United States Department of Agriculture

Fig. 16—Head of Fowl Affected With Contagious Catarrh (Roup), Showing Swelling of the Eye.

SCALY LEGS

Symptoms: Scurvy appearance on legs and toes.

Cause: Small parasite scarcely visible to the eye.

Treatment: Dip legs in mixture of one pint raw linseed oil and one-half pint kerosene. Repeat treatment twice a week.

SOFT SHELLED EGGS

Cause: Too little lime in ration or lack of Vitamin "D." Sometimes hen becoming overly nervous will lay such an egg.

Treatment: If hen becomes chronic layer of such eggs, dispose of her. Keep plenty of oyster shells before birds at all times.

TICKS

Symptoms: Birds become thin and listless.

Cause: A parasite which attacks birds only at night.

Treatment: Same as mites, only very strong, for they are difficult to destroy. Disinfect house.

TUBERCULOSIS

Symptoms: Fowls are inactive, pale, dull, sometimes lame. They will lose weight and diarrhea usually is present.

Cause: Germs enter fowls through mouth with food and water. Sick birds spread germs through droppings. More common under crowded conditions and in houses that are damp and improperly ventilated. Very resistant and difficult to control.

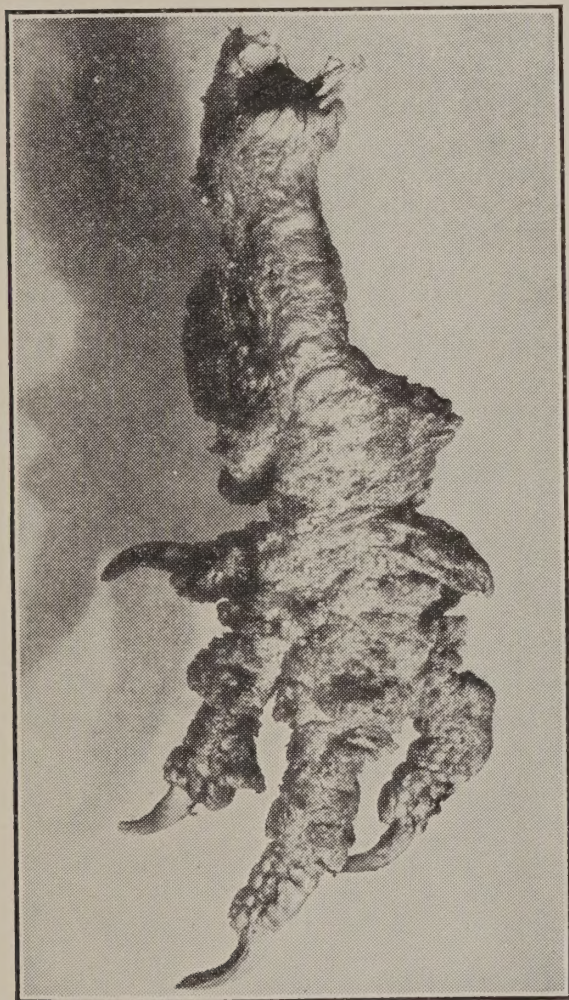
Treatment: Dispose of infected birds. Put dropping boards in the house and keep them clean. Thorough cleaning and disinfection. Use new ground. Plenty of sunlight and air. Dryness. Medical treatment useless.

TYPHOID

Symptoms: Similar to cholera. Most times laboratory test necessary to distinguish.

Cause: Germs spread in same manner as cholera.

Treatment: Same as cholera.



—Courtesy Kansas Agric. Experiment Station

Fig. 17—The Leg of a Chicken as It Commonly Appears in Scaly Leg

VENT GLEET

Symptoms: Cankers or brown scabs on vent. Has offensive odor.

Cause: May be germ infection but authorities do not agree.

Treatment: Clip feather and fluff from vent, bathe with mild antiseptic. Syringe with solution of eight grains Potassium Permanganate and pint of warm water. It is best to destroy diseased birds.

INTESTINAL WORMS

Symptoms: Wasting away, loss of appetite, dull listless appearance. Quite common in young stock in early fall. Worms in droppings. Death or stunted growth. Post Mortem: Intestines full of worms.

Cause: Surroundings unsanitary. Infested soil—constant use of same ground.

Treatment: Put on fresh ground, plow and seed old runs. Fill or drain all puddles about buildings and yards. Give one pound tobacco powder in 24 pounds of mash or two grain capsules of mixture of santonin $2\frac{1}{2}$, calomel $2\frac{1}{2}$, aloin $3\frac{1}{2}$, and areca-nut 10 grains. Follow treatment with Epsom Salts. Sanitation. Tobacco tea can also be used.

"WARNING"

If birds are raised in an orchard be sure windfalls are cleaned up before birds have an opportunity to eat them. Intestinal disorders occur from birds eating partially rotted apples.

REMOVING PRINTING FROM EMPTY BAGS

Wet the bags in cold water and smear the bags thoroughly with good strong soap. Roll and let them set for twenty-four hours, then wash in cold water. Another method is to soak bags in kerosene over night, then wash.

We hope the information contained in this booklet will be helpful and that you will be successful in your poultry raising venture.

If we can be of any further service to you, we will be happy to have you write us.

POULTRY FEED SERVICE DEPARTMENT
THE GREAT ATLANTIC & PACIFIC TEA COMPANY
504 HODGSON BUILDING
MINNEAPOLIS, MINN.

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